



Figure 1. Informal settlements adjacent to formal areas. Photo: Cafacas Cenital.



## David Gouverneur

### The resilient cities of the near future

We are honored to have with us David Gouverneur, Associate Professor of Practice in the Departments of Landscape Architecture and City Planning at the Weitzman School of Design of the University of Pennsylvania. Since the 1980s, he has carried out cutting-edge experiences in professional practice, public office, teaching, and scientific research in Venezuela and Latin America and some African nations. Welcome to the community of Vitruvio - International Journal of Architectural Technology and Sustainability. We look forward to an *informal interview*, understanding informal as creative and dynamic as you use it in your views on urban planning and sustainable design.

We are living in very changing times. Nothing can be taken for granted. Territories are increasingly devastated by catastrophic climatic events (floods and landslides), earthquakes and unstoppable wars, growing inequalities, migratory flows, increasing poverty, and impoverishment of the natural and cultural heritage. You propose a landscape-driven paradigm shift to reverse the current drift and to meet the challenge of sustainable development. Your ideas are condensed in the book “Planning and Design for New Informal Settlements: Shaping the Self-constructed City”, published by Routledge in 2014, and an updated and expanded version in Spanish “Diseño de Nuevos Asentamientos Informales”, published by the Editorial Funds of EAFIT University (Medellín) and La Universidad de la Salle (Bogotá) in 2016. The attention in these publications is focused on informal settlements, namely those that grow spontaneously, many in unsuitable areas not covered by urban planning. Maybe, they are somehow a side effect of urban planning that increases the costs of building areas and makes them inaccessible to weaker social groups. The spontaneous districts have attracted your interest so much that you have earned the nickname ‘*barriologue*’, a Spanish-English neologism to indicate an expert in slums.

Vitruvio journal thanks the interviewee for sharing with our readers your smart views of stitching together formal and informal cities and your remarkable teaching, research and professional experiences. Now we will continue to be more consciously facilitators of knowledge for an informal and sustainable future where human beings have equal opportunities for growth and progress in a less unfair world.

All the images courtesy of David Gouverneur.

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#### IN MEMORIAM

On September 24th the Master Zvi Hecker passed away at the age of 92. We are proud and honoured of having published his last interview in Vitruvio past issue. His sharp thought and marvellous insights reflected in his architecture, always alien to the logics of the market, will continue to inspire us, now and in the long run. He was an outsider, a free thinker who never came to any compromise, for the sake of the beauty and truth enclosed in the building as a work of Art. Thank you Maestro! You are and will be missed.

**Graziella Bernardo:** *What are the potentials of informal cities in the sustainable development of cities?*

**David Gouverneur:** Let me begin by saying that I never use the English term slums. I find it derogatory, the same as in some Latin American countries it was common to refer to them as “*comunidades marginales* or *villas miseria*”. I do like the term *barrio* since in the Spanish-speaking Caribbean, *barrio* has a very affectionate connotation, reflecting a strong sense of belonging. Call them organic, self-constructed, unplanned, young towns, whatever but not slums. They are settlements in the early stages, in the making, that just need a bit of support to make them sustainable and great places to live. Throughout history, cities have evolved as a combination of self-constructed and planned and designed efforts. Cities we cherish today as Paris, London, Barcelona, Rome, Florence, and Istanbul, just to mention a few, were enormous informal settlements that attracted migrants seeking better living conditions and opportunities, later assisted by a combination of political, institutional, and technical efforts. The question is, what degree of assistance is needed today to better empower informality considering the magnitude and velocity of growth of the predominantly informal city, and the contemporary environmental challenges, while addressing social inclusion, making the communities part of the process, and resulting technically and politically viable processes?

**G.B.:** *How can we reduce the disparities between the formal and the informal city?*

**D.G.:** This is the key question. The main challenge is to reduce social inequalities and to spread the benefits of living in cities and territories. In many countries of the global south, the population that lives in such settlements varies between 30% and 85%. Thus, they are the dominant component. Informal urbanization is and will be the main driver of urban growth in many cities that are expected to become the largest conglomerations in history, particularly in Africa. Consequently, informality cannot be considered an irregular or outlawed city.

To address urban inequalities we must counteract cultural, professional, institutional, and political biases against the informal city, offering approaches that can make a real difference, effectively and quickly. A major obstacle is that the conventional city planning simply ignores or works against the informal city. While most countries have introduced changes in their legal framework to acknowledge the informal city and require the public sector to act on its behalf, the response has been slow, limited, and even counterproductive. I point out some of the limitations:

- Conventional planning and zoning are real-estate driven; thus, creating plus value on the land which in most developing countries, with a colonial past, is in very few private hands. The low-income population cannot access this formal market, having only informal jobs and no savings. Consequently, they are forced to occupy sites that are deemed unfit for urbanization in the official urban plans (as flood plains, steep hills, unstable land, adjacent to landfills, and even environmentally protected areas).
- Traditional urban planning is slow and works inversely to how informal urbanization occurs. In the formal planning process, after carefully studying the sites, urban grids, blocks, and building typologies are defined, services as potable water, sewers, electricity, etc. must be ensured, and then project, construction, and occupation permits are granted. While all this is done, entire communities have already squatted randomly on unurbanized land, with no preliminary risk studies, protection of environmentally rich areas, lacking urban frameworks, infrastructure, provisions for open spaces, or reserving land for communal services.
- The plans for upgrading existing and frequently very dense informal settlements have proven to be very successful if carried out in a holistic way and working closely with the communities with creative site-specific solutions -as in the still non-surpassed case of Medellín-; but they are also very laborious, and time consuming. These plans also require a certain percentage of substitution housing within the same neighborhoods to provide the space to introduce urban improvements. Besides, there is a limit to what can be achieved with this “surgical approach”, since larger urban components such as parks, hospitals, universities or technical schools, large sports facilities, etc., cannot be accommodated for lack of space, and thus can be accessed only in the formal city.

Referring to biases, I would like to point out that while in the academic, professional, institutional, and political arena, the improvement of existing informal settlements has been accepted as a viable approach, planning for the emergence of new self-constructed settlements still seems like a taboo, illegal, inconvenient, and politically problematic, even when it is acknowledged that informal urbanization cannot be halted. This is the paradox. We should keep on mind that as the non-assisted informal settlements become larger growing further away from the formal city, the problems will magnify. Not acting now will result in a future social time bomb, affecting both the formal and the informal city.

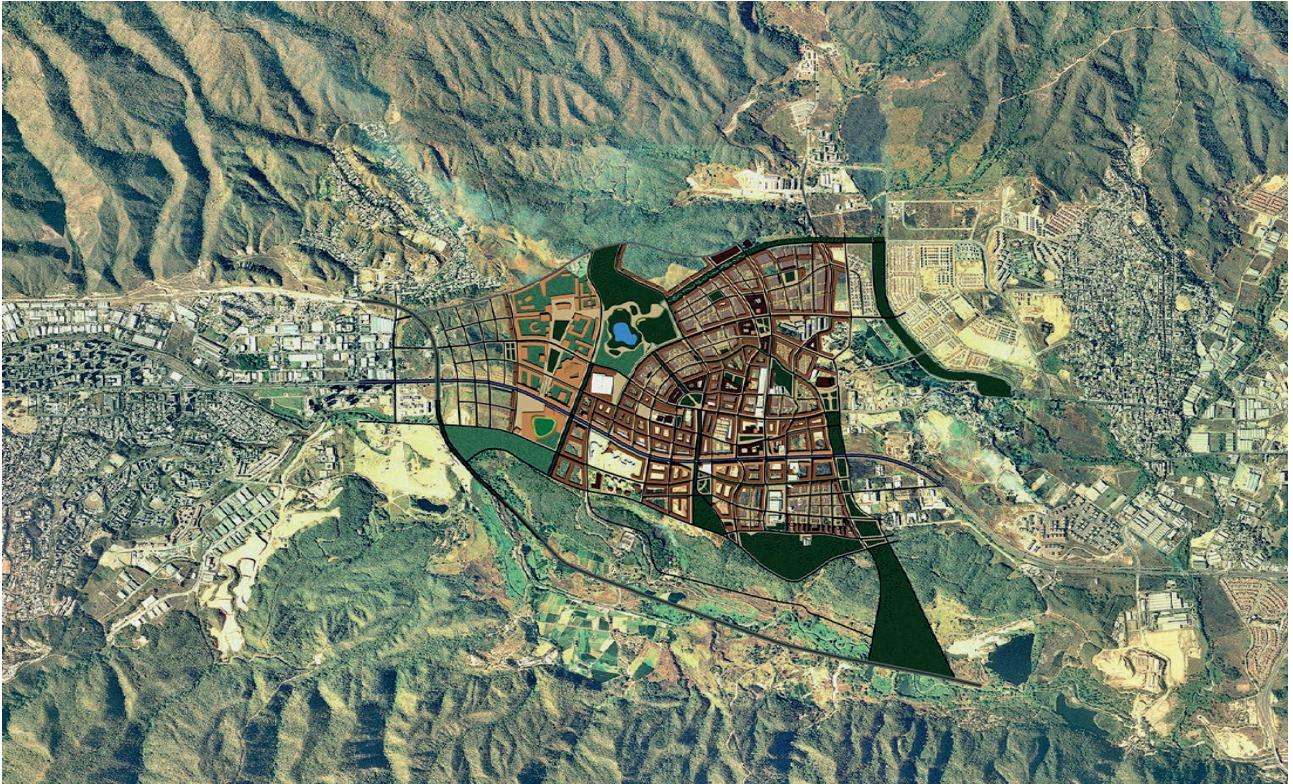


Figure 1 | Urban Design Plan for Ciudad Fajardo, Venezuela/Informal settlements push to the periphery onto unsuitable sites. Photo: Luis Sully (Universidad Metropolitana de Caracas).

Here is where the Informal Armatures Approach advanced in my publications may become an easy-to-implement tool to address these pressing social, environmental, and urban challenges. The main notion is that it is easier to preemptively envision a sustainable framework before occupation takes place, and accompanying the evolution of the self-constructed city, and its connections with the formal city, when the conditions are still malleable than when the settlements are dense and consolidated. The approach also posits, that as in education, engaging the communities in sustainable practices can better be achieved in the early stages.

**Luis Palmero:** *In your books, you propose the Informal Armatures Approach (IAA), an extraordinarily innovative approach that you have applied in several projects. Could you illustrate the role of the three key components (corridors, patches, and stewards) of the methodological approach, citing some case studies?*

**D.G.:** Sure, let me begin by mentioning some of the conditions that are required to successfully apply the IAA before I refer to the design components mentioned above. The efficacy of the initiative begins by ensuring

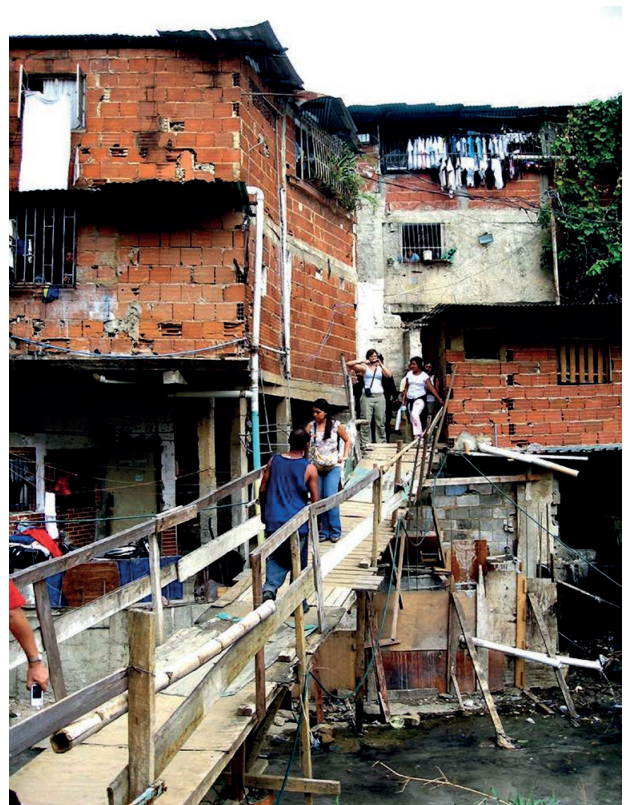


Figure 3 | Barrio Catuche, Caracas. Self-constructed homes on the flood plain of a ravine. Photo: David Gouverneur.



Figure 4 | Urban improvements and relocation housing in Quebrada Juan Bobo, Comuna Nor-Oriental, Medellín, Colombia. Photo: David Gouverneur.

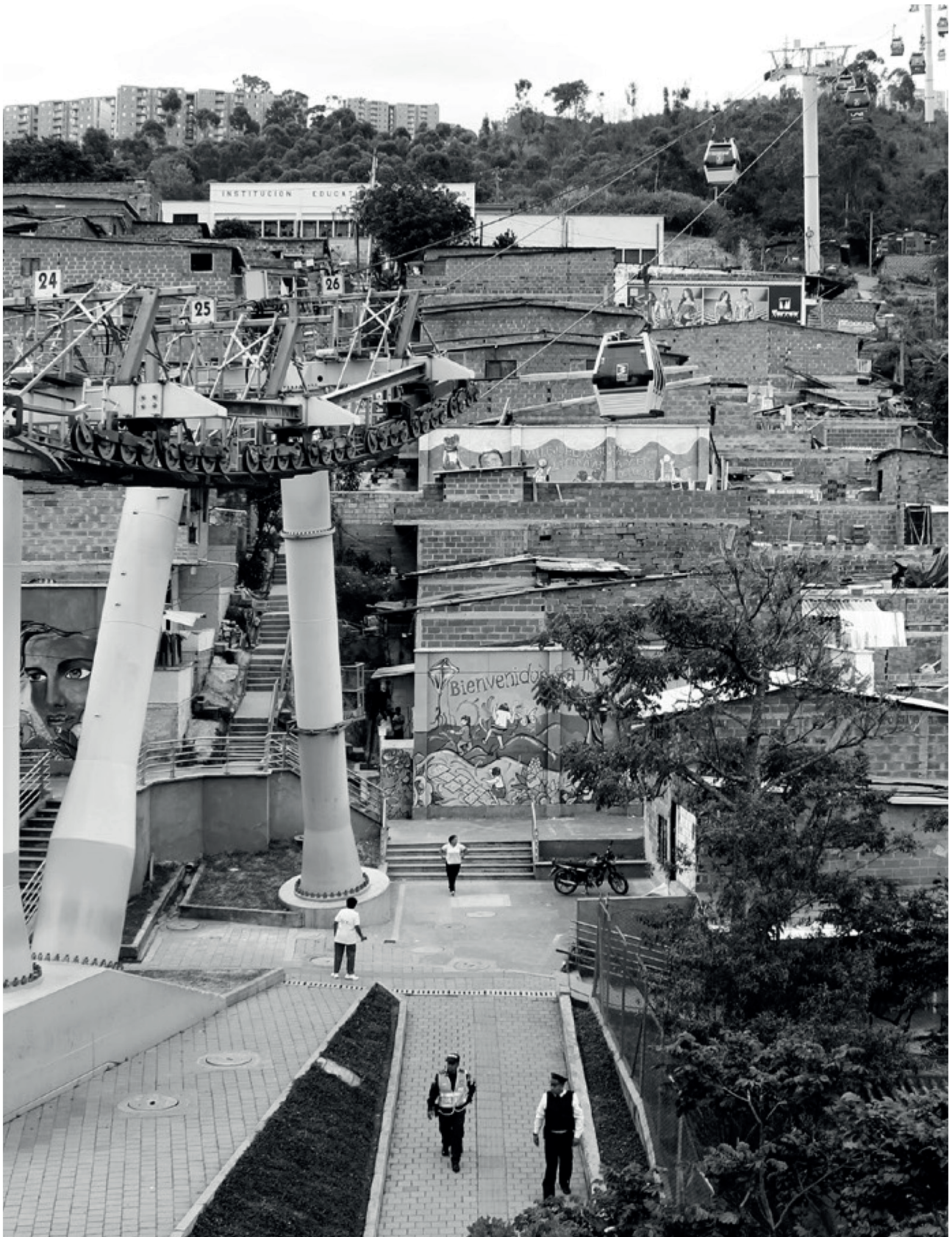


Figure 5 | San Javier aerial gondola system and public spaces, Medellín Colombia. Photo: David Maestres.

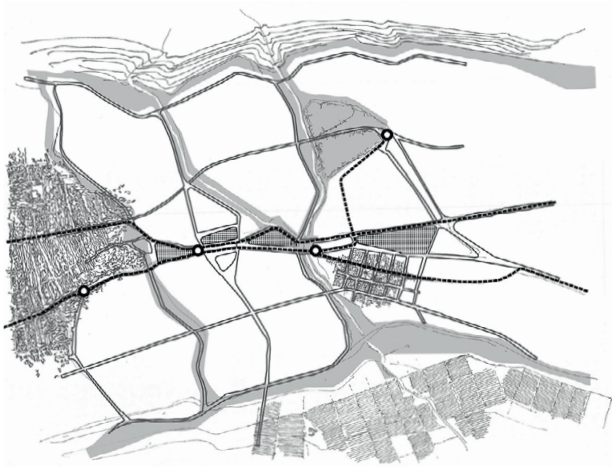


Figure 6 | IAA Diagram of Protector Corridors (in gray), and Attractors Corridors (in hatched lines).

proactive political support and having a qualified and fast-moving technical team committed to the philosophy and demands of the approach, and eager to work hand in hand with the community on site -as was the case in Medellín and other successful cases. The elasticity of this preemptive approach also relies on assembling public land, which is the best option to counteract the exclusionary effect (socially and spatially) of real estate-driven urbanism.

It is important to note that most countries of the global south do not require or provide the legal tools to national and regional governments, or municipalities to create a bank of public lands. Nor do they have the legal-technical mechanisms to advance urban operations that allow assembling different private properties to carry out urban plans that result in win-win operations creating public spaces, and lots for community services, while envisioning profitable urban projects for the landowners.

Assembling public lands, by amicable acquisition, eminent domain, public-private partnerships, or repurposing already public land (as agricultural or former military or industrial sites) provides the opportunity to begin laying out the initial Corridors, Patches, and Stewards, the design and performative components that support the approach. It is also relevant to mention that, from the first planned cities of civilization, urban theories (utopias) envision a set of simple design components that allow to ground them, adapting them to different contexts, for instance, the Roman city, the Spanish colonial design considerations embedded in the Laws of the Indies, or even the Corbusian model. The IAA suggests



Figure 7 | Protector and Attractor Corridors to relocate an informal settlement from the floodplain of the Combeima River, Ibagué, Colombia. Project at the Weitzman School of Design/University of Pennsylvania (UPenn).







Figure 8 | Protector and Attractor Corridors connecting formal and informal areas in Quitumbe, Quito, Ecuador Project at the Weitzman School of Design/UPenn.

a simple set of components that are on one hand landscape-driven and on the other compatible with the more organic/fractal nature of informal urbanism, defined as:

**The Corridors** structure the public realm, providing ecological services and acting as the urban framework for the predominately self-constructed city. They are the support system, providing the settlements with high-standard conditions, and the opportunity to better connect the informal to the formal. Such components of the public realm rarely occur spontaneously in the non-assisted informal city which tends to become a dense continuum of dwellings. This may be the main limitation that sets apart the unassisted settlements from the formal city. The IAA considers two categories of Corridors: Protectors and Attractors.

**The Protector Corridors** are indented to safeguard the ecological components that are vital for the sustainability of the settlement and broader urban and territorial systems: as the protection of watersheds, areas of biodiversity, high vegetated areas, floodplains, response to climate change, water management, rich agricultural soils, archeological sites, etc. (It is important to note that the ecological layer was absent in modern planning,



Figure 9 | IAA Diagram of Receptor Patches (light gray) and Productive/Transformer Patches (dark gray).

particular in the cities of the global south). The IIA posits, that s is not enough to identify and map these assets. It is important to associate them with uses and community Stewards that a relevant to the community from the early occupation of the settlement, as communal productive



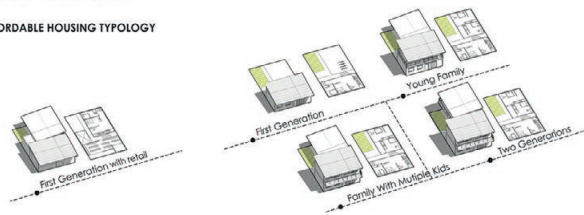
Figure 10 | Productive/Transformer Patches, serving formal and informal growth areas in Ibagué. Project at the Weitzman School of Design/UPenn.

**NEW PRODUCTIVE & PEDESTRIAN-FRIENDLY NEIGHBORHOODS**



New residential districts offer social housing including the provision of lots for self-constructed dwellings or expandable homes which may depart from a small basic unit, allowing the users to expand them horizontally and vertically according to the changing family needs, with rental units and also small shops.

**AFFORDABLE HOUSING TYPOLOGY**



**MIDDLE CLASS HOUSING**

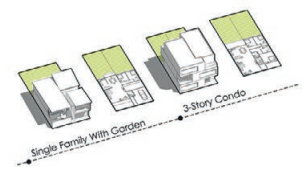


Figure 11 | Receptor Patches offering lots for self-constructed homes with agricultural plots for Villanueva, Ciudad de Guatemala. Project at the Weitzman School of Design/UPenn.

gardens, simple recreational or sports facilities, or green infrastructure for water filtration. If this affectionate and practical bond is not achieved, the settlers will gradually squat on them. Let's note that in most developing countries, urbanization turns its back and gradually encroaches on the hydrological and environmental systems. In the

IAA they become important visible and accessible design features.

The **Attractor Corridors** play a supplementary role. They are intended to draw urbanization, more density, and activities to favorable locations, concentrating economic

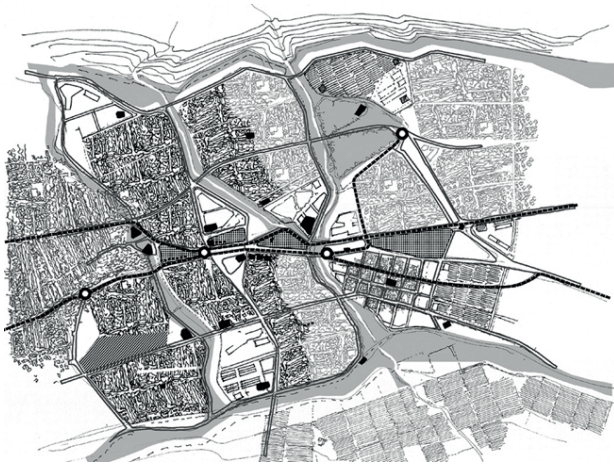


Figure 11 | Stewards (black dot) and a Composite of all the components of IAA.

activities, mixed-uses, providing public transportation, public spaces, communal and urban services, etc. They tend to be in more central locations of the settlements to increase the urban areas they can serve, and they usually connect to active areas of the existing informal and formal city. They also tend to change over time more than the Protector Corridors as the settlements increase in population, complexity, income, and aspirations, even offering uses that surpass the neighborhood scale.

The **Patches** can be considered the urban infill, a diversity of urban uses that do not occupy the public realm, although they may include uses of a public nature. The most relevant components of this category are the **Receptor Patches** which are meant to make available lots for self-constructed dwellings, free of risks, with legal ownership, offering security to the dwellers. Receptor Patches play a similar role like that of the programs that began to be developed in the 1980s known as “Site and Services”. These programs acknowledged that the users were able to construct their homes tailored to their needs, and thus offered urban frameworks, basic infrastructure, and the distribution of lots for the shelters sometimes including an initial housing core from which the residents could begin to expand and improve them, and technical support. The main difference with the Site and Services initiative is that in the IAA they are nurtured by the Protector and Attractor Corridors, providing the ecological and multiscaler benefits previously described.

The IAA also envisions **Transformative or Productive Patches** that are meant to provide the supplementary uses that rarely occur spontaneously in the settlements, such as manufacturing areas, large markets, hospitals,

technical schools, universities, sports complexes, transportation centers, institutional centers, museums, etc., and thus low-income dwellers must commute to access them in the formal city. The logic here is that if not planned for, strategically located within the fostered settlements, and providing services that are relevant to the community in the different phases of evolution, these uses will never be there. The question is how to secure these spaces from being squatted upon.

Throughout the book, in my classes, and practice, I mentioned the importance of designing for changing conditions. The settlements are constantly densifying, expanding, and incorporating new uses and demands, consequently, the Corridors and Patches also are required to morph. For instance, an Attractor Corridor will probably have to incorporate a public transit system, but this cannot occur till there is a critical mass of the population to justify it, it is a matter of economy of scale. In conventional planning, you may be able to define the appropriate location of a bus or a light rail to be developed in the future. But in the predominantly informal city, this mobility alignment will surely be squatted upon impeding the provision of this basic service. What then if this corridor is temporality used as an agricultural linear field, fenced, and stewarded by a respected NGO or communal organization till the time comes to replace it by the transit system?

Similarly, in an early phase, a useful productive or transformative Patch may be a recycling center operated by the city and the dwellers to take advantage of pre-selected city waste to be used in the construction of the initial residential shelters. (This is one of the main reasons that informal settlements frequently emerge near dangerous not reclassified landfills). As the dwellings expand and consolidate, and the income of the residents rises, they do not usually have to rely on recycled materials. At this point, the recycling center can be relocated to a new frontier where new settlements are emerging. The liberated area of the early recycling center can then be considered for other agreed-upon between the facilitators of the approach and the residents, such as a park, a sports facility, or a manufacturing center.

Through a transformative approach, we can safeguard the space required to provide uses that will normally not appear in the spontaneous self-constructed city. This may offer enormous conceptual and design opportunities to respond to the volatility and uncertainties of contemporary urbanization, particularly informally driven. And here is where the notion of Stewards seems to be helpful.

**Stewards** are envisioned as more nodal, acupunctural, iconic, or emblematic places and edifices, associated with an institution, neighborhood association, or leaders, that



Figure 12 | A market adjacent to a proposed transportation Corridor stewarding a recreational and productive landscape, for Villanueva, Ciudad de Guatemala. Project at the Weitzman School of Design/(UPenn).

are highly respected by the community. The Stewards can appear in any of the Corridors and Patches. They have several roles: a) to secure the spatial requirements from unwanted informal or formal occupation, a sort of “garden keepers” keeping a looking eye, b) to monitor and foster the transformation of the components according to changing urban demands, and c). they also have an important responsibility in the self-management and governance at a neighborhood or local scale, facilitating or supplementing those of municipal and regional governments.

For instance, let us imagine that the IAA settlement is adjacent to an environmentally protected area, as a flood plain, or rich agricultural lands, all of which should be protected from urban encroachment. What if a school, a religious edifice, a NGO, etc. is located at the fringe between the settlement and the area to be protected, and these entities are given custody of a narrow band dedicated to community gardens, planting, water management, recreation, or even fenced until this type of uses can be developed? This stewarded band will most likely

hold the edge, avoiding urban expansion. The respected park-libraries in Colombia and the health, cultural, and agricultural centers of Rwanda, are good examples of these observant garden keepers. The IAA posits that the combination of **Corridors**, **Patches**, and **Stewards** can create a robust urban ecology in constant flux.

**G.B.:** *How can we meet the challenge of climate change with preemptive actions? How can we pollute?*

**D.G.:** Environmental concerns including climate-change pivotal challenges of contemporary planning and design. As has been mentioned these can be dealt with Protector Corridors. Your question already implies the two modes of responding to these challenges, one operates in a preemptive manner, before informal or formal occupation occurs, and secondly acting upon existing settlements. It is much easier to preemptively identify the areas at risk of being affected by related to climate-related aspects such as flooding, landslides, and sea-level rise, as well as to protect or rehabilitate the natural systems that help avoid and mitigate these risks.



Figure 13 | A community center adjacent to a water well for Hopley Farms, Harare, Zimbabwe. Project at the Weitzman School of Design/(UPenn).

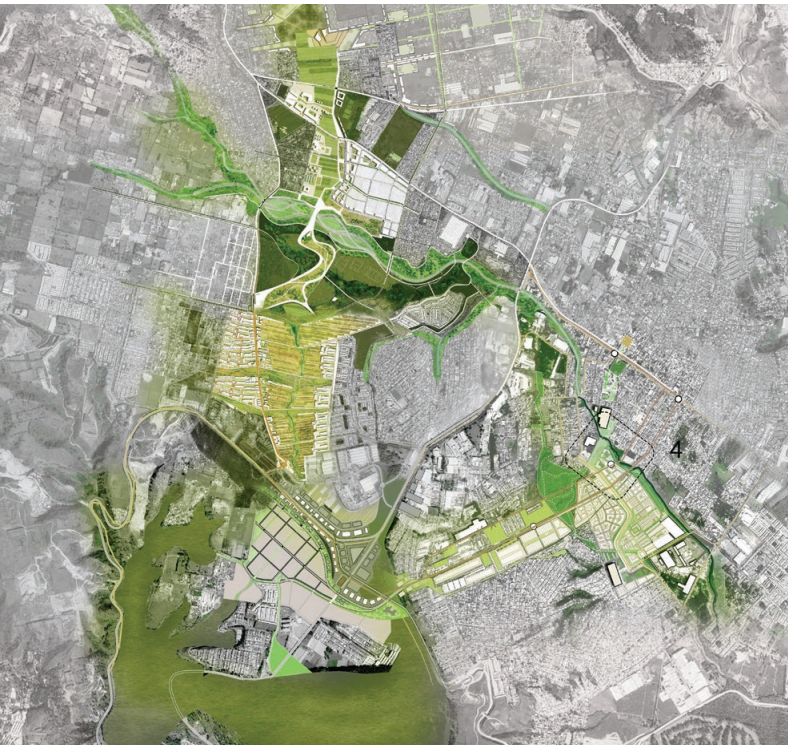
Simply, because the natural systems are less intervened, the space is available, and relocation of the population/substitution housing is not required. Usually, topographic moves, planting and habitat restoration, agroforestry, green infrastructure for decontaminations and water filtrations, and the technical and design responses require space to make a positive impact.

But it is also possible to work on the rehabilitation of existing urban areas that have already been affected by catastrophic events, or on those in which there is a high probability of being affected by climate-related forces (such as hurricanes), or gradually over time (as from rising sea level). The second scenario is more complex, it requires a more surgical approach and may be constrained by the obvious resistance of the population to be relocated even if this occurs within the same districts.

In both scenarios, the environmental agenda must meet the urban demands and the socio-economic cultural constraints. And here is where the holistic approach IAA is useful. For instance, the IAA strategies proposed for Toa Baja, Puerto Rico a low-density Municipality comprised of fragmented urban patches many of them informal settlements. Here, we addressed

the impact of different types of risks, in different time frames, including seasonal flooding from the island's main River, the accumulation of rain on large and defunct agricultural lands, and periodical hurricanes, all of which are expected to be aggravated by sea-level rise, saltwater intrusion, and more recurrent and stronger hurricanes.

Here, the availability of open spaces allowed us to envision topographic moves, introducing the construction of berms to protect from river overflows, and retention basins to hold water and allow for infiltration and evaporation. These berms also incorporate of a system of walking and bike trails, interconnecting the urban patches; paths that can encourage ecotourism, and the creation of risk-free public spaces. The retention basins also allowed for improved irrigation, to support large-scale agroforestry as well as smaller community gardens in a country that imports 80 of its food. Retention basins can also allow the protection and expansion of the habitat of endangered species of "coquis" a minuscule endemic frog that is the symbol of Puerto Rico. The IAA seeks multifunctional and multiscale landscape design solutions.



Figures 14, 15, and 16 | Multiscaler Protector and Attractor Corridors, Receptor and Productive Patches, for Villanueva, Ciudad de Guatemala. Project at the Weitzman School of Design/(UPenn).



**Figure 16** | Protector Corridors for flood control, habitat restoration, water management and irrigations, Productive Patches for domestic and commercial agriculture in Toa Baja, Puerto Rico. Project at the Weitzman School of Design/(UPenn).

**L.P.:** *What materials and construction technologies can be used in self-construction systems?*

**D.G.:** Informal settlements vary from country to country, region to region, and district to district in terms of land conditions, density, family and dwelling size and distributions, construction technologies, and materials. In many cases, dwellers of self-constructed settlements do have the skills -or quickly gain them from former residents to build their homes, taking advantage of materials locally available. Many residents work, or have relatives and friends that do so, in the construction industry; thus, they display a high degree of creativity, efficiency, and technical resolution, using materials and spatial layouts. These respond to cultural patterns, climate, family sizes, and the possibility of continuously expanding and improving their homes to accommodate expanded families, or to incorporate small businesses, or to rent units. The home becomes an income-generating device.

However, statistics also demonstrate that the construction costs concerning the structural solutions, the walls to subdivide spaces, or the plumbing and electrical

installations of informal constructions are more expensive than those in the formal construction sector. Simply because low-income dwellers must gradually buy the materials in very small quantities and store them -till they are sufficient to build a wall, floor, or roof- and cannot do it wholesale. There are other problems, the lack of previous basic land studies in non-fostered informal occupations may lead the dwellers to occupy unstable land. In some cities, as in Caracas, the settlements are very dense and tack-up surpassing 8-10 stories. These vertical informal edifices surely will not stand during a violent quake. The lack of spaces to evacuate in such an event will further contribute to the loss of lives. These are aspects that the IAA can address.

Furthermore, as had been explained the IAA can secure agricultural lands, contributing to keeping alive practices that derive from the rural origin of the settlers, boosting food security, and providing additional sources of income. In some case studies, the Protector Corridors can also sustain the production of wood and fibbers, clay, and other materials that can be used in the construction of the dwellings. The on-site provision of materials also



**Figure 17** | Pedestrian trails and public spaces as Attractor Corridor connecting existing informal settlements, in Toa Baja, Puerto Rico. Project at the Weitzman School of Design/(UPenn).

helps to reduce construction costs, further engaging the community in building their habitats and producing a climatic and culturally responsive architecture.

**G.B.:** *In your laboratory of practice and workshops, students work on huge paper maps spread out on the floor or large tables. It is not uncommon to see them walking over them, almost as if the map allows a physical immersion in the case study. How do you combine the skills required in the use of new digital tools with project practice?*

Yes, the large, printed maps! My colleagues and students make fun of me, they say that each semester they get bigger! I come from the stone age when everything was hand drawn. The huge maps as you mention allow many things:

- To clearly “read the landscape”, the streams, the masses of vegetation, the paths, the urban grids, the footprint of buildings, etc. This is done simultaneously by registering the big picture and the details.





Figures 18, 19, and 20 | One day Charrette working over large maps with local actors. Left, UPenn students and faculty working peers, community leaders and municipal representatives at the University of Ibagué, Colombia. Center and right, UPenn students and faculty working with students and faculty from Great Lakes University and Maseno University from Kisumu, and city officials from Siaya, Kenya.

- To encourage interdisciplinary group work, and doing so with communities that can rapidly see where they live on the map, and how they move around, but also discovering territorial and urban and neighborhood relations that they were not aware of. After we carry out preliminary site analysis in the studios, we visit the sites, take new copies of the large maps with us, and hold a participatory charrette with local actors. First, we ask them to identify with sticky notes over the maps the good, the bad, and the possible”.
- To quickly cover the maps with trace paper and sketch out between the studio participants and the local actors the first attempt to define the Corridor, Patches, and Stewards. The hand-drawn refinement of the proposals continues in the studio till the middle of the course as a collective effort.
- At this point, the large maps are photographed and scanned, and they are enhanced digitally. Then, the collective team breaks down to carry out more detailed work on specific sites, changing scales, and working in smaller groups or individually. The work on these zoomed-in areas also begins over large maps and using the trace paper method, further increasing the landscape legibility, and appreciation of local nuances, scale, etc.
- Digital tools take over to allow the bringing in of site-specific data (such as GYS topography lines, land uses, ownership, the precise location of infrastructure and services or lack of them, mobility flows, social conditions, etc.), to refine the plans, and produce compelling 3D “placemaking” visualizations of the design ideas. The digital renderings become a powerful tool allowing the audiences to appreciate the drivers and the experiential qualities of the proposals.

The hybrid manual/digital method combines the best of both of both worlds. Digital design, no matter how big the screens are, -and the use of collective/participatory graphics applications- tend to be more individualistic. And there is an additional problem. The digital media compresses the territorial/urban images losing detail, they allow to zoom in to see detailed areas but lose the big picture. Furthermore, the 3D digital renderings (and now AI renderings cans offer seductive visual images of what a place could be. However, when the students and professionals are asked to refer to the scale, the tectonics, the geometries, the technicalities, or even the contextual and cultural appropriateness that will derive in physical manifestations of these compelling visions, they have a hard time doing so. The hand-drawn work can compensate for these limitations.



Figure 21 | Hand drawn Protector Armatures connecting working over large maps, connecting Cerro Ancón to adjacent districts. Project by students from the Master of Landscape Architecture, Universidad Isthmus, Ciudad de Panamá.

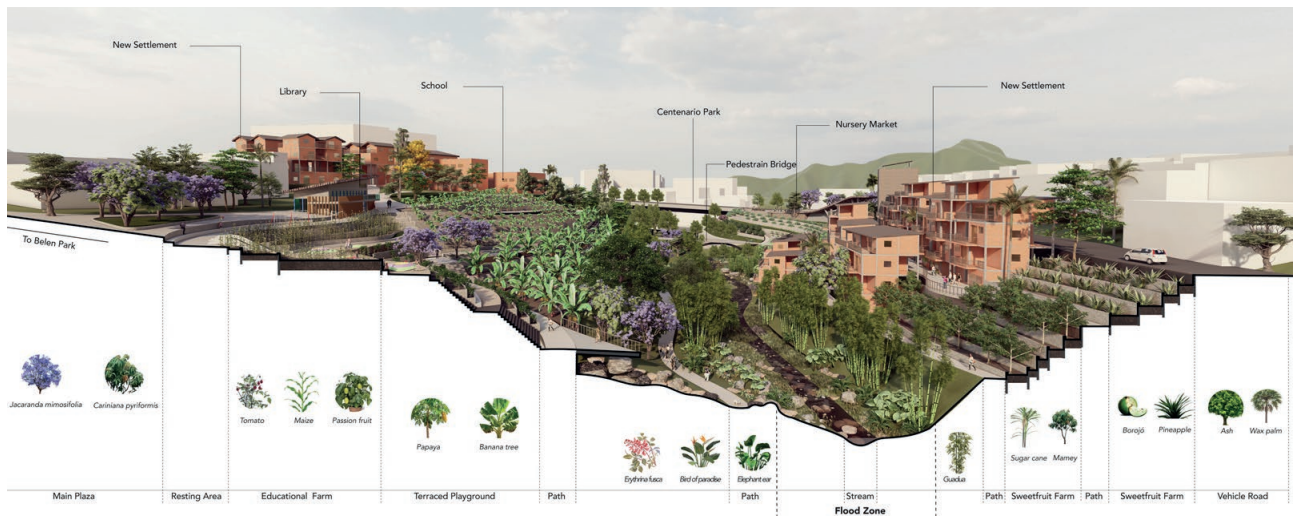
**L.P.:** *Your approach stemmed from your experience in the Latin American context and offers case studies mainly for cities in this region. Can the IAA be applied in other regions, and can the notions be applied to addressing the world's urban ecosystems?*

**D.G.:** These are other great questions. The IAA offers versatility, and adaptability, and operates at different scales since it is based on notions of ecological, social, and urban relations and transformations, and not on dogmatic or standardized solutions detached from ecological and environmental and ecological concerns and the appreciation of cultural nuances. This was unfortunately the capital sin of the modern movement approach to urban planning which still influences contemporary practices. The IAA focuses on environmental responsibility and social inclusion which are perhaps the dominant challenges of our times, calling for site-specific landscape and culturally based solutions, in which the performative aspects are supported by compelling while at the same ecological time transformative morphological/place-making solutions.

The IAA can certainly be adapted according to the demands of each context and enriched by the contributions of experts in a variety of science, technology, social, and design-related fields. We have applied in several African case studies with similar contextual conditions and demographic growth patterns that Latin America experienced decades earlier.



Figures 22 and 23 | Hand drawn Protector and Connector Armatures, and Productive Patches, for Kisumu, Kenya, “walking” over large maps at the Weitzman School of Design/(UPenn).



**Figure 24** | Protector and Productive Armatures, and Relocation Housing for settlements at risk, and allowing to extend the Parque del Centenario, in Ibagué, Colombia. Project at the Weitzman School of Design/(UPenn).

Multiple scenarios may take advantage of the principles of the approach when self-construction is and can be a driving force. For instance, refugee camps that were originally conceived as transitory, rigid, and almost all service-provided military settlements, have seen generations born in the camps that have grown into real informal cities defying the original camp mode, with challenging ecological and social conditions. The IAA can be a different way to deal with this ever-growing trend. Similarly, economic melt the original meltdowns, political and religious conflicts, and climate change are fueling migratory trends and the emergence of large informal settlements in countries that had eradicated or improved them decades ago or adding to the urban fabric of cities where informal settlements do exist.

In both conditions, there is the “stigma of the unwanted”, the outsiders that must rejected, kept apart, or forced out again. In most cases, these new informal settlers are there to stay, consolidate, and expand with the same problems we detect in non-assisted settlements. In many cases, migrants are attended in temporary shelters or formal social housing is provided in numbers that never cover the demand. These are also emergent self-constructed scenarios in which the IAA can come in handy.

I am encouraged to see that generations of my former students are using the IAA approach in their professional practice, research, and teaching. For instance, a new version of the book including new case studies will be published in 2024 in China, thanks to the translation and commitment of former students. Here the IAA may have

very different goals. In a context where the economic boom, the aspiration of quick societal transformations, and a more centralized system of political decisions new informal settlements are not emerging. Contrarily, many centuries-old self-constructed settlements -here called villages- are being eliminated, relocating the population frequently to distant sites, and in urban solutions closer to and extruded Corbus’ La Ville Radieuse vision.

In this different context, the main message of the new book is to advocate for the improvement of living conditions in the villages both in rural areas and particularly in the periphery of the large megacities. The goals here are safeguarding the settlements as depositories of millenary cultural and environmentally friendly practices (that are quickly vanishing) and as stewards of rich agricultural land (also needed for the survival of the cities). Here, the IIA can connect and provide benefits for both form of urbanization: the organic/self-constructed -whose DNA stems from the past and the knowledge of land and water- and the planned -those form of urbanization that embraces a still rather unknown high powered economic and technological-driven future. Urban ecological principles suggest that hybrid solutions are always richer and more resilient.

About the second part of the question -concerning the global urban ecology, there are authors such as Prof. Richard Weller, former Chair of the Department of Landscape Architecture at the University of Pennsylvania, and his Doctoral student Robert Levinthal, who focus their research on mega ecological regions. Their work stresses the importance of ensuring the protection, rehabilitation,



Figures 25 and 26 | Protector and Productive Armatures, and Patches for Relocation Housing for settlements at risk, adjacent to the Opia River, Ibagué, Colombia. Project at the Weitzman School of Design/(UPenn).



Figure 27 | Hybrid graphics (hand drawn, mixed and digital) Kisumu Kenya Studio Project at the Weitzman School of Design/(UPenn).

and interconnection of habitats that span large territories, surpassing national boundaries.

These large-scale ecological systems encompass very different natural, urban, social, and political, conditions; as well as the availability of local managerial and financial resources to move in the direction of the big-picture's goals. It is particularly relevant to identify the hotspots, and the areas where entropic forces (urbanization, agriculture, mining, etc.) threaten the environmental stability, and interrupt habitat continuity. Site-specific responses, pilot projects, and appropriate phasing are required.

The IAA can contribute to reestablishing these connections, seeking solutions that simultaneously address environmental protection, and urban, and agricultural/productive demands. In 2020, I taught a studio with Professor Weller, focused on Bogotá -one of the Latin American megacities, and how urban expansion is occurring -and is expected to accelerate in coming decades- impacting the ecological systems and valuable agricultural and grassing lands on his fragile and former wetland covered hinterland, La Sabana de Bogotá. The

findings of this Studio, in which the IAA approach was tested at a regional scale, are condensed in the publication "The Hotspot Cities Project: The Case Study of Bogotá 2050, by R.Weller, D.Gouverneur, S.Drozd, and B.Ye, Routledge 2021.

**G.B.:** *What is the meaning of what you call a hybrid response? What are the social, economic, and environmental benefits of IAA? What are the advantages of the multiscale and multidisciplinary approach of IAA, and how can the community be entrusted with the self-construction of the public and entire neighborhoods and larger territories?*

**D.G.:** The IAA can be considered a hybrid method for different reasons. It combines the contributions of landscape/ecological-driven urbanism with the dynamism, social drive, and fractal nature of the self-constructed city. It seeks to support the communities only in aspects that they cannot achieve on their own, strengthening their efficient practices, but dissipating their negative conditions in terms of risk management, sanitation, ecological impact, limited connectivity and infrastructure, weak economies, poor levels of visibility, political outreach, social exclusion, and even violence.

It also helps to better connect the formal to the informal city, homologating conditions in the informal city to those of the formal one, and over time it allows the inclusion of urban uses and amenities that serve an urban metropolitan and even a territorial scale. The approach tends to operate at the urban fringe where most new informal settlements appear, at the urban-rural threshold. It tries to blur this 20th-century dichotomy, by providing urban conditions that profit from the rural and ecological scenarios and allowing for urban agriculture and habitat protection and restoration.

The IAA requires interdisciplinary, and community engagement/quick takeover. The ecological, urban, socio-economic, and political complexities of cities cannot be addressed in silos. Even less when as has been mentioned a high percentage of the urban form will be self-constructed.

Academia rarely fosters interdisciplinary work and community engagement, rather than favors specialization and distance. Fragmented visions and actions pass onto the professional, institutional, and political spheres. Here, I must refer again to Medellín; the initial success that induced the ongoing transformation of this once-challenged city derived from proactive political support, municipal agencies performing in tandem, and highly qualified technical teams, working closely with the communities.



Figure 28 | Hybrid graphics (hand drawn, mixed and digital) Kisumu Kenya Studio Project at the Weitzman School of Design/(UPenn).

Consequently, the importance of securing multi-tasking and qualified facilitators of the IAA, and operating on-site. For instance, during the early stages of a settlement, when migrants are arriving from rural areas to the city in search of better opportunities, they are usually in “survival mode”, seeking water, food, shelter, and safety, with the fear of initiating life in an unfamiliar context. On one hand, the facilitators must engage with these early needs, gain communal trust, and work together, and on the other, they must keep in mind that these first settlers will be part of a much larger and complex territorial/urban conglomerates.

The facilitators should be able to juggle different balls and even cope with uncertain conditions, learning from past experiences, experimenting, and changing directions. The facilitators should also have the become great communicators and perform with the skills of social workers to engage the communities in the planning and design phases of the initial moves, and in the subsequent transformations of the settlements. The sooner this connection occurs, the sooner community leaders can take over, taking control of the IAA-fostered components and associated processes, and seeking technical advice when needed.

This way the inherent participatory “do it yourself” nature of informal urbanism can go way beyond the construction of dwellings to be a force shaping the public realm at different scales and fostering changes in the urban patches and stewards. This seems to be another advantage of the hybrid IAA. The quick transfer of knowledge and leadership to the communities allows the professional staff to ignite and become facilitators in other sites.

The approach IAA offers predominantly self-constructed urbanization conditions that can surpass those of the formal city in terms of malleability, adaptability, and communal engagement. The IAA may also contribute to fostering the heritage urban sites of the near future in terms sense of place, identity, and morphological and aesthetic quality, derived from the cultural forces that shape these settlements in sharp contrast with the standardized and globalized trends that are shaping the formal contemporary city.

*Graziella Bernardo  
Luis Manuel Palmero Iglesias*